

What is claimed is:

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1. A single element objective lens for an optical disc drive, said objective lens converging a laser beam emitted by a laser source on a data recording surface of an optical disc through a protective layer of the optical disc,

wherein one surface of said objective lens is divided into a central area including an optical axis of said objective lens and a peripheral area surrounding said central area, said central area being formed as a continuous surface having no stepped portions, said peripheral area is provided with a diffraction lens structure formed by a plurality of concentric annular zones including minute steps, said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature.

2. The objective lens according to claim 1, wherein area of said peripheral area is not greater than area of said central area.

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3. The objective lens according to claim 1, wherein said diffraction lens structure is configured to have a characteristic in terms of a spherical aberration such that the spherical aberration changes in an under corrected direction when a

wavelength of the laser beam incident on said objective lens increases.

4. The objective lens according to claim 1, which is formed of plastic, a refractive index of which is lowered when the temperature increases, a wavelength of the laser beam increasing when the temperature increases.

5. A single element objective lens for an optical disc drive, said objective lens converging a laser beam emitted by a laser source on a data recording surface of an optical disc through a protective layer of the optical disc,

wherein one surface of said objective lens is divided into a central area including an optical axis of said objective lens and a peripheral area surrounding said central area, a diffraction lens structure formed by a plurality of concentric annular zones including minute steps being formed only in said peripheral area, said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature.

6. The objective lens according to claim 5, which is formed of plastic, a refractive index of which is lowered when the temperature increases, a wavelength of the laser beam increasing

when the temperature increases.

7. An optical system of an optical head for an optical disc drive, comprising:

a laser source unit that emits a laser beam; and

a single element objective lens that converges a laser beam emitted by said laser source unit on a data recording surface of an optical disc through a protective layer of the optical disc,

wherein one surface of said objective lens is divided into a central area including an optical axis of said objective lens and a peripheral area surrounding said central area, said peripheral area being provided with a diffraction lens structure formed by a plurality of concentric annular zones including minute steps, said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature.

8. The optical system according to claim 7, wherein said central area is formed as a continuous surface having no stepped portions.

9. The optical system according to claim 7, wherein said laser source unit selectively emits one of a first laser beam and a second laser beam, a wavelength of said second laser beam being

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longer than a wavelength of said first laser beam, said second laser beam being incident on said objective lens as a diverging beam, said first laser beam being incident on said objective lens as a beam having less divergence than said second laser beam, said objective lens converging the first laser beam on a data recording surface of a first optical disc through a first protective layer of the first optical disc, said objective lens converging the second laser beam on a data recording surface of a second optical disc through a second protective layer of the second optical disc, a data density of the first optical disc being higher than a data density of the second optical disc, a thickness of the first protective layer being smaller than a thickness of the second protective layer.

10. The optical system according to claim 7, wherein a wavelength of the laser beam emitted by said laser source unit increases when the temperature increases, and wherein said objective lens is formed of plastic, a refractive index of which being lowered when the temperature increases.

11. The objective lens according to claim 7, wherein said diffraction lens structure has a characteristic in terms of a spherical aberration such that the spherical aberration of said objective lens changes in an under corrected direction when a wavelength of the laser beam incident on said objective lens

increases.

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